

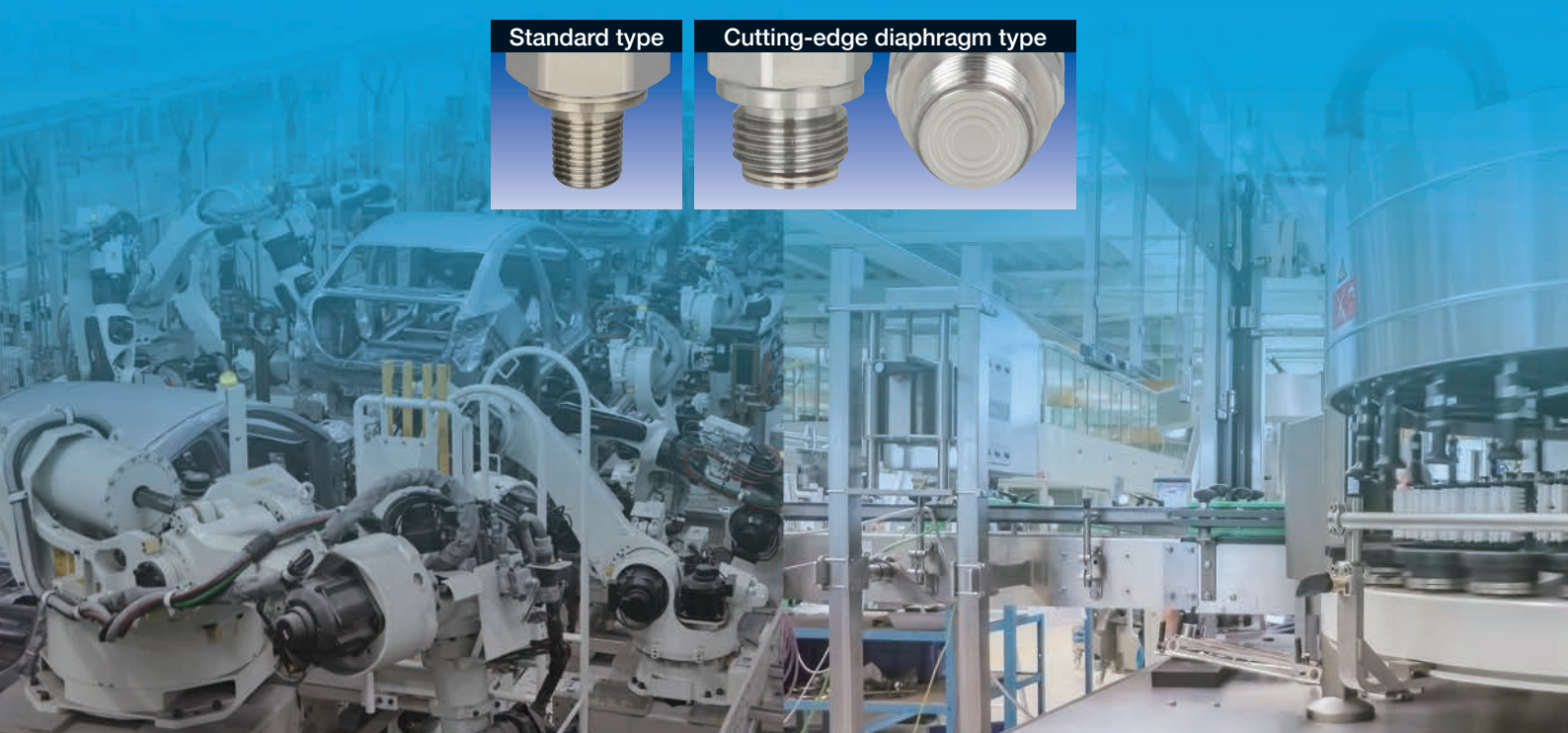
ER31 Battery-Less Pressure Sensor

**Liquid/Gas
measurement**
(With stainless diaphragm)



- RFID (NFC) realizes battery-less and wireless power supply
- Pressure & ambient temperature data can be acquired by touching the product
- Easy to install due to compact size and no wiring required
- Compliant with the RE Directive of the EU Radio Law

**RFID (NFC) realizes
battery-less and
wireless power supply!**



ER31 Battery-less Pressure Sensor

Battery-less pressure sensor with RFID (NFC) contributes to IoT of production sites and efficiency of patrol monitoring!

1 Wireless power supply!

2 Easy to install due to compact size and no wiring required.

3 Measures pressure and temperature*

* Temperature data is a reference value (temperature inside the case).

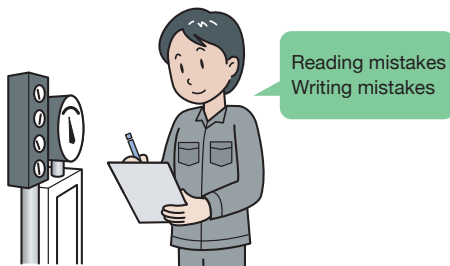
4 1/8 weight of conventional pressure gauge* (approx. 100 g)

* Compared with ø100 pressure gauge.

Application examples

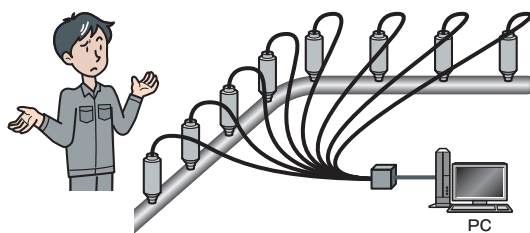
Pressure measurement for regular and irregular patrol monitoring

Visual inspection is prone to mistakes



Measuring pressure in extremely small areas

Wired connection is cumbersome



Data processing after measurement

Converting handwritten records into data is time-consuming

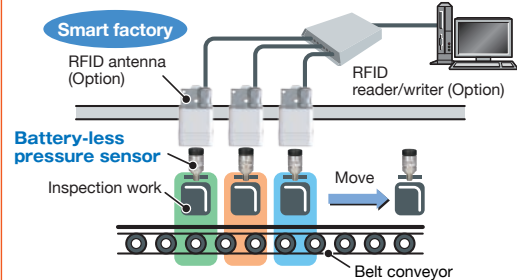


Improved inspection workability with one touch!

Easy to read
Reducing mistakes



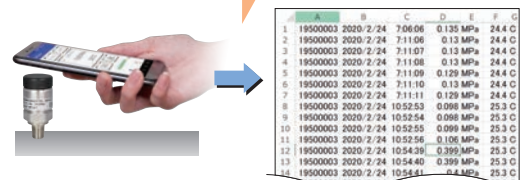
No wiring is required, so pressure measurement at extremely small points is easy



* For measurement software for using the RFID reader/writer, please contact us.

Improving workability of data aggregation with one touch!

Direct CSV output of read data



Main specifications and performance

● ER31 Battery-less pressure sensor

Pressure range (Described in display digits)			Max. allowable pressure ^{*1}	Allowable vacuum pressure	Position difference	Accuracy (at 23°C)	Temperature characteristics (Both zero and span)	
	Gauge pressure	Absolute pressure						
Absolute pressure and low pressure range	0.00 to 35.00 kPa		100 kPa	130 Pa abs. or more	30 Pa or less/90°	±(1.0 %F.S. +1 digit) (at 23±2 °C)	±0.1 %F.S./°C	
	0.0 to 50.0 kPa	-20.0 to 20.0 kPa	200 kPa					
	0.0 to 100.0 kPa	-50.0 to 50.0 kPa						
		-100.0 to 0.0 kPa	200 kPa abs.					
								0.0 to 120.0 kPa abs.
	0.0 to 200.0 kPa	-100.0 to 100.0 kPa						400 kPa
	-100.0 to 200.0 kPa							
	0.0 to 300.0 kPa	-100 to 300 kPa	1000 kPa					
Medium and high pressure range	0.000 to 0.500 MPa	-0.100 to 0.500 MPa	200 % of pressure range	—	—			
	0.000 to 1.000 MPa	-0.100 to 1.000 MPa						
	0.000 to 2.000 MPa	-0.100 to 2.000 MPa						
	0.000 to 3.500 MPa							
	0.00 to 5.00 MPa							
	0.00 to 10.00 MPa							
	0.00 to 20.00 MPa							
	0.00 to 35.00 MPa							
	0.0 to 50.0 MPa							150 % of pressure range

*1 Allowable maximum pressure is the upper limit to which pressure may be temporarily increased while still allowing normal pressure to be resumed, when pressure levels return to the normal (rated) range.
It is not guaranteed to have no impact on functionality in the case of repeated pressure or static pressure increases lasting 10 minutes or more.

Item	Description	
	Absolute pressure/low pressure range products	Medium/high pressure range products
Model number	ER31-0□8	ER31-0□4
Wetted parts material	Diaphragm material: SUS316L Joint: SUS316L	Diaphragm material: SUS630 Joint: SUS304
Sealed liquid	Silicone oil	—
Connection thread	R1/4, G1/2A (Cutting-edge diaphragm)	R1/4, G1/4A, G3/8A
Measuring fluids	Air, water, oil (non-corrosive gas or fluid)	
Degree of contamination	Standard IEC60664 Class code 2	
Operating altitude	Altitude 2,000 m or less	
Operating temperature and humidity range	-10 to 60 °C, 85 % RH or less (no freezing or condensation)	
Power supply	Wireless power supply (battery-less)	
Wireless system	RFID(NFC Tag 13.56 MHz, ISO/IEC 14443 Type B)	
Protection code	IP65 (with air inlet port)	
Transmitted data	Pressure, temperature*2, serial No., TAG No., pressure range, peak hold value	
Function	Zero adjustment, zero adjustment clear, peak hold	
Response speed	2 s or less	
Communication distance	2 mm or less (smartphone), 8 mm or less (transmission output 200 mW products)	
Vibration resistance	100 m/s ² (10 to 2000 Hz)	JIS C 60068-2-6-2010
Impact resistance	1000 m/s ² (6 ms, 3 times in each direction)	JIS C 60068-2-27-2011
Applicable standards	CE (EU RoHS directive, EU RE directive)	
Weight	Approx. 100 g	

*2 Temperature data is a reference value (temperature inside the case). Please use within the operating temperature range (-10 to 60 °C).

This product does not emit radio waves, but it may be subject to the radio law in each country. Please use it after confirming the applicable standards of this product and the radio law of the country of use. (Available in Japan, USA and EU countries)

● Smartphone (Android) dedicated application

Item	Description
Application name	RFID Sensor (Please download from the Google Play Store.)
OS	Android 5.1.1 or above
Data reading screen	Status, TAG No., pressure display, temperature display, zero adjustment function, logging enabled/disabled
Setting screen	Status, TAG No., peak hold display, pressure range display, TAG No. change function, zero adjustment reset function, serial No.
Function	Logging function
Management	Transmitted data is saved as a CSV file.

Free release

Compliant with NFC Type B standard

- Measuring values can be read with smartphones (with NFC), commercially available RFID readers and writers (NFC Type B specifications).

How to use

Smartphone and tablet terminal (with NFC)

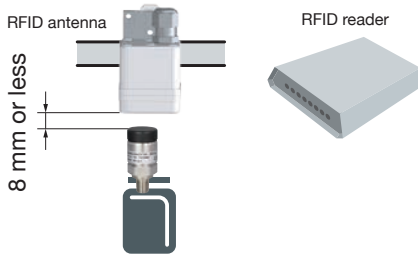
(OS: Android 5.1.1, iOS 13 or later)*



* You can read pressure data with a general-purpose NFC application. Smartphone (Android) dedicated application has been released free of charge.

RFID reader (Option)

(NFC Type B specification, transmission output 200 mW)



Smartphone (Android) dedicated application

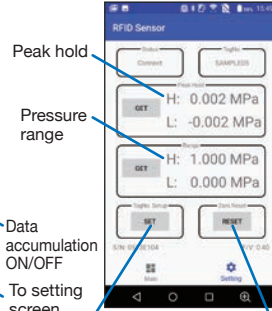
- Measurement value data is acquired for each S/N by touching the product.
- Easy to confirm of pressure and ambient temperature on site and the recorded value can be converted into data.

Smartphone (Android) dedicated application

[Data reading screen]



[Setting screen]



Zero adjustment TagNo. setting Alphanumeric, 8 characters Zero adjustment reset

* The number of digits displayed for pressure varies depending on the range. The image is displayed in the 1 MPa range.

[Example of CSV data output]

	A	B	C	D	E	F	G
1	19500003	2020/2/24	7:06:06	0.135 MPa	24.4 C		
2	19500003	2020/2/24	7:11:06	0.13 MPa	24.4 C		
3	19500003	2020/2/24	7:11:07	0.13 MPa	24.4 C		
4	19500003	2020/2/24	7:11:08	0.13 MPa	24.4 C		
5	19500003	2020/2/24	7:11:09	0.129 MPa	24.4 C		
6	19500003	2020/2/24	7:11:10	0.13 MPa	24.4 C		
	19500003	2020/2/24	7:11:10	0.13 MPa	24.4 C		

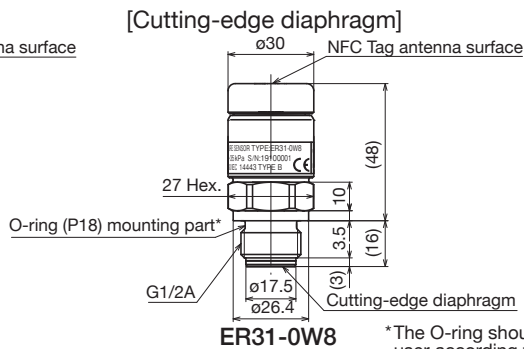
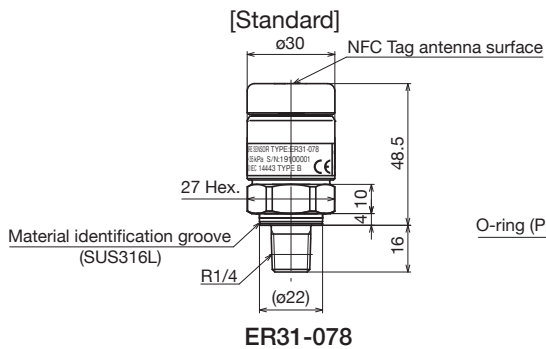
TAG No. Measurement date and time Measurement data

* Please prepare a smartphone (tablet) by yourself.

Dimensions

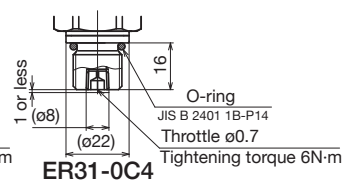
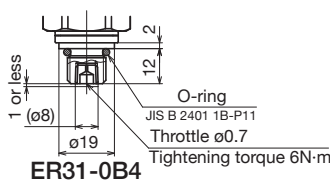
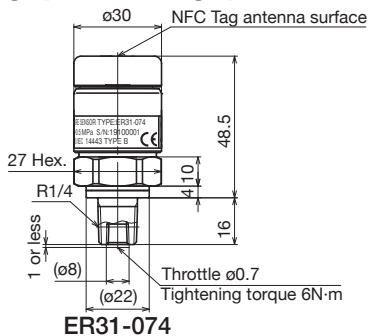
Unit: mm

● Absolute pressure/low pressure range products: Wetted parts material (Diaphragm: SUS316L, Thread: SUS316L)



*The O-ring should be prepared by the user according to the measuring object.

● Medium/high pressure range products: Wetted parts material (Diaphragm: SUS630, Thread: SUS304)



Model number configuration Please specify the model number and each specs for ordering.

Absolute pressure/low pressure range products

Model name

ER31

0

8

7

×

×

×

8

×

×

×

×

×

Battery-less pressure sensor

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮

Model number	Selective spec.	Additional spec. (option)
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ER31	[Standard specifications] Wireless system: RFID (NFC Tag 13.56 MHz, ISO/IEC14443 Type B) Reading device: Smartphone, tablet terminal, RFID reader, etc.	Protection class: IP65 Power supply: Wireless power supply
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① Wireless communication system	0	RFID
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② Connection	7	R1/4
	W	G1/2A (Cutting-edge diaphragm type)

③ Wetted parts material	8	Diaphragm material: SUS316L, Joint: SUS316L (Sealed liquid: Silicone oil)
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④ Pressure range	1	-20 to 20 kPa (compound range)
	2	-50 to 50 kPa (compound range)
	3	-100 to 100 kPa (compound range)
	4	-100 to 200 kPa (compound range)
	5	-100 to 300 kPa (compound range)
	6	-100 to 0 kPa (negative pressure range)
	7	0 to 35 kPa
	8	0 to 50 kPa
	A	0 to 100 kPa
	B	0 to 200 kPa
C	0 to 300 kPa	
D	0 to 120 kPa abs. (absolute pressure range)	

Please specify the pressure range separately for ordering. →

⑤ Accuracy	7	± (1.0 %F.S.+1 digit) (at 23±2 °C)
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⑨ Measures against surge pressure (Throttle)	8	Nil
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⑩ Treatment	0	Nil
	1	Use no oil
	2	Use no water
	3	Use no oil & water

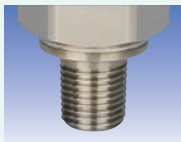
⑮ Documents	0	Nil
	1	Required

* Only "Yes or No" is available for "Documents." Please provide separate specifications in regards to the content.

* For any special specifications outside of those described above, please contact us for an estimate.

This product does not emit radio waves, but it may be subject to the radio law in each country. Please use it after confirming the applicable standards of this product and the radio law of the country of use. (Available in Japan, USA and EU countries)

● Standard type



● Cutting-edge diaphragm type



For medium/high pressure range products, please see the next page.

